DR. C. V. RAMAN UNIVERSITY
KARGI ROAD KOTA BILASPUR (C.G.)

GREEN CAMPUS POLICY

&

RAMAN GREEN CLUB

(RGC)

Dr. C.V. Raman University
Vice Chancellor
Bilaspur (C.G.)

GREEN CAMPUS POLICY OF DR. C.V. RAMAN UNIVERSITY

1. The Vision

The University recognizes that in pursuing its strategic objectives, in relation to research and teaching, it has a responsibility towards the mother earth and should aim to protect and nurture the environment. By exercising proper control over all its activities, the university aims to ensure sustainable use of resources and prevent wasteful or damaging practices

Dr. C. V. Raman University will aim to manage its operations in ways that are environmentally sustainable, economically feasible and socially responsible in making the University a Green Campus, where environmentally friendly practices and education combine to promote sustainable and eco-friendly practices. The University is striving to develop on a self-sustainable basis in the areas of power, water and cleanliness. Therefore, this policy represents an important component of the university's broader sustainability strategy.

This policy document sets out the University's aims and objectives for safeguarding the environment, and details the organization and arrangementsfor implementing and monitoring them.

2. The Purpose

2.1. The purpose of this policy is to ensure that the university operates in a sustainable manner managing energy and water consumption by using energy and water efficiently, wisely and responsibly. This policy contributes to meeting the university's commitments and goals with respect to energy and water-related costs as well as greenhouse gas emissions associated with energy use.

2.2. To align with the university's greenhouse gas reduction targets, the university has set a goal to reduce energy and water consumption annually by 5% Reducing overall energy and water consumption which isa key to meeting the university's commitments.

2.3. This policy supports and enhances the university's commitment to environmental sustainability and encourages change in individual behaviors, actions, and campus processes.

2.4. The policy supports management of ongoing energy and water related costs and reduces university risk to future carbon compliance regulations and payments. Energy and water management provides leadership on this global issue.

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3. Principles

The university is committed to modeling sustainability and practicing effective stewardship of institutional resources while providing an excellent learning, teaching and research environment. The university is committed to increasing environmental sustainability through implementation of the Campus Sustainability Plan.

4. Aims and Objectives

- To promote sound environmental management, policies and practices throughout the University,
- To reduce and, where practicable, prevent pollution.
- To adopt targets for improving environmental performance.
- To ensure a sound understanding of current environmental performance

5. Scope of the policy

This policy applies to faculty, staff, students, researchers and other members of the campus community of Dr. C.V. Raman University. All water and energy sources (including, but not limited to, electricity, steam, chilled water, gasoline, diesel and natural gas) are included.

6. The Policy

Energy and water are essential to university operations to support all work, study and research. All members of the campus community will endeavor to use energy and water in the most efficient manner possible. Energy and water use can be managed by all departments, colleges and units through awareness and adoption of the most efficient procedures and practices.

The campus community shall make informed choices to minimize the institution's ecological footprint associated with energy and water, with a goal of continuous improvement and reduced operating costs.

It is Dr.C.V. Raman University's goal to reduce energy consumption on campus whenever possible through the support and everyday efforts of faculty, staff, students and university visitors ("the campus community"). This shall be accomplished through the following energy conservation measures:

7. Individual actions:

Close doors and windows; turn off lights, computers, printers and faxes when not in use.

8. Technical strategies:

Pursue energy savings in equipment operations and maintenance, as well as in building renovation and new construction.

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9. Formation of Clubs & Committee for Education and outreach: Raman GreenClub (RGC):

Establish a Raman Green Club and encourage energy conservation and environmental stewardship oncampus and beyond campusthrough the club.

9.1 **OperatingUniversity Facilities:** It will be operated in the most energy efficient manner without endangering public health and safety and without diminishing the quality of education regardless of the source of funding for their operations.

9.2 **Future construction and, renovation:**It will be designed for optimum energy utilization. Lowest life-cycle operating costs, and in compliance with all applicable energy codes and regulations. In instances where a project's current funding does not include energy features consistent with lowest life cycle costing, augmentations will be sought, when warranted. Incorporation of energy efficient design features in the project plans and specifications will receive a high priority next only to meeting health, life-safety code elements and the academic program needs of the project within the available project budget.

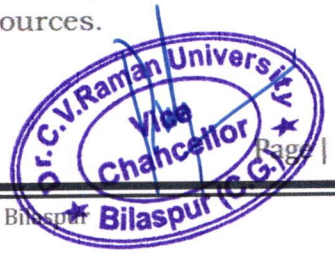
9.3 Monitor the effects of energy conservation efforts on instructional programs and environment, the campus energy/utilities managers shall solicit and evaluate feedback from faculty, staff, and students Training on new energy management concepts and programs will be provided as necessary. Also, to designate an Energy/Utilities Manager from CVRU Green Raman Club, with the responsibility and the authority for carrying out Energy Conservation and Utilities Management Programs.

10. Responsibilities of Raman GreenClub (RGC):

The implementation of the policy guidelines and green campus initiatives with all the relevant responsibilities are carried out by the **RAMAN GREENCLUB** of the University.

10.1 Members of the campus community, faculty, staff, students, researchers and visitors, are responsible for identifying areas of inefficient energy and water use and measures to remedy inefficiencies, and actively working towards eliminating inefficiencies in energy and water use.

10.2 The Energy Steering Committee of Raman Green Club overseen by the Sustainability Committee, is responsible for the oversight, guidance and endorsement of energy conservation on campus; approving the Energy Management Plan and energy reduction targets; updating this policy; approving energy and water conservation procedures; engaging working groups to develop and implement solutions for energy reduction; and supporting working groups in allocating required resources.



10.3 TheSustainability Committee of Raman GreenClub is responsible for leading the institutionalization of sustainability in all areas of campus life, including reducing the university's ecological footprint associated with energy, water and GHG emissions

11. Best Practices by theRamanGreenClub (RGC):

Many sources of information are available on methods and practices for using energy and water efficiently. The following are some helpful practices initiated by Raman GreenClub on individual actions to consider.

11.1. Turn lights out when you leave rooms unoccupied or in unoccupied rooms that you pass. Encourage others to do the same.

11.2. Turn off or unplug office equipment, laptop computers, monitors and lab equipment, unless in use, especially at night and on weekends. Unplug equipment that is not used frequently.

11.3. Turn off fume hoods and biosafety cabinets when not in use to prevent the loss of conditioned air.

11.4. Adjust the thermostat to save energy when you are away from your office or dorm room for extended periods or vacations". Set to lower temperatures during the winter and warmer settings during the summer. (*where thermostat is adjustable)

11.5 Develop research processes that are efficient and use resources wisely.

11.6 Dress appropriately for each season. Personal heaters and cooling devices are strongly discouraged.

11.7. Choose computer and device power management settings to minimize energy usage.

11.8. Report water leaks to Customer Service Centre.

11.9 Use compact fluorescent light or LED bulbs in all floor and desk lamps.

11.10 Do not idle fleet vehicles

11.11. Develop funding opportunities to support investment in energy and water conservation projects

11.12 Develop a communication plan to share with the campus community energy efficiency and energy and water performance.

11.13. Develop engagement and awareness programs with regular publicity campaigns.

11.14. Implement an Energy Management Information System to monitor consumption and measure and verify savings for energy and water

12. Intended Benefits from green campus practices by Raman GreenClub

Meeting or exceeding these goals should result in the following benefits:

1. Reduce rising utility costs on campus
2. Extend the life of expensive equipment and facilities
3. Reduce greenhouse gas contribution
4. Create a healthier environment for our faculty, staff, students, visitors, and surrounding communities 5. Promote new research and teaching opportunities focused on energy management and sustainability

13. Procedure:

Action Item: A) Implement an Energy Conservation Policy:

An energy conservation policy is needed to document the goals of the University inestablishing recognition of energy savings. The energy conservation policy includes:

- Creating guidelines for proper management of our energy resources, (e.g. water, natural gas, and the energy products of steam, chilled water, and electricity).
- Controlling the waste of natural resources.
- Maintaining the most comfortable and safest environmental conditions in university buildings at the lowest cost
- Creating an outline to be used for educating faculty, staff, students and guests of the University in the day-to-day practice of energy conservation. An updated but unapproved policy is attached for further discussion and consideration.

Action Item:B) Energy Conservation Efforts in Place

Action Item:C) Conduct an Energy Audit and Implement StrategiesIdentified

Action Item:D) Implement Culture Changes

Action Item: E) Establishing Carbon FootprintReduction

Action Item: F) Energy ConservationThrough Innovation

13.1 Guidelines for Energy Conservation -

The following guidelines for energy conservation shall be followed in all buildings managed by Facilities Management.

1. Indoor Air Temperatures:

During normal occupied hours the target indoor air temperature are:

HEATING SEASON -

The heating season is generally from mid-October to mid-April (depending upon prevailing weather conditions).

During normally occupied hours, heat will be provided to maintain indoor temperatures as close to 67 F as practical (usually +2'F). During off hours, temperatures may be allowed to drop as low as 55'F.

COOLING SEASON -

The cooling season is generally from mid-April to mid-October (depending upon prevailing weather conditions).

1. During normally occupied hours, cooling is provided to maintain indoor temperatures as close to 78'F as practical (usually +2'F). During off hours, temperatures may be allowed to either rise above this temperature, or in the case of the hottest periods, drop below this level in order to lower our cooling demand during peak use periods

	SUMMER	WINTER
Office Space:	78 degrees	67 degrees
Class rooms	78 degrees	67 degrees
Laboratories	78 degrees	66 degrees

2. During off hours, heating, ventilation and air conditioning systems shall be adjusted so that indoor air temperature settings achieve the greatest energy savings possible while protecting university assets.

3. Temperature exemptions will be granted only under extenuating circumstances.

4. While buildings are being heated or cooled, doors and windows shall remain closed and as secure as possible to prevent loss of conditioned air. Do not prop doors leading to the outdoors of buildings.

5. Chemical fume hood sashes shall be closed when not needed to prevent loss of conditioned air. Whenever possible, exhaust fans shall be turned off when hoods are not in use.

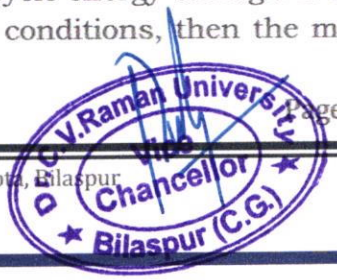
6. All windows in buildings and/or facilities that are air-conditioned will be kept closed and as secure as possible to prevent loss of conditioned air.

PURCHASING:

i. ENERGY STAR qualified equipment, systems and appliances (see http://www.energystar.gov) shall be purchased whenever such products are available and the following two conditions are satisfied:

   a) The quality and function of the ENERGY STAR qualified product is equal or superior to that of non-ENERGY STAR qualified products; and,

   b) The additional upfront cost of the ENERGY STAR qualified product is less than its resulting lifecycle energy savings. If it is not possible to satisfy both of these conditions, then the most



energy efficient-equipment, systems and appliances possible shall be purchased.

ii. Energy-efficient flat panel computer monitors shall be purchased unless medical, instructional; research or other special requirements necessitate the use of less efficient CRT monitors.

iii. Computers and other electronic office equipment, as well as window air conditioning units (where applicable), shall be turned off when not in use and at the end of the day. iv. Refrigerators, microwaves and coffee makers consume large amounts of energy and are not authorized for use in individual spaces on campus.

LIGHTING:

i. Lights shall be turned off when not in use, when leaving a room unoccupied and at the end of the day.

ii. Energy-saving fixtures, lamps, ballasts and lighting control systems will be used to the fullest extent possible in routine maintenance and repair jobs, as well as in major renovation and new. construction.

iii. Artificial lighting is to be used only when daylight is insufficient to perform the task at hand, or where campus safety would be comprised without artificial lighting.

iv. Lighting levels recommended by the most recent edition of the Illuminating Engineering Society (IES)

v. Day lighting shall be used to the fullest extent possible in major renovation projects and new construction projects

vi. Outside lighting on building exteriors and campus grounds will be maintained at levels necessary to provide security and safety to promote confidence within the campus community. Good energy management practices shall be observed within this guideline.

WATER:

i. Water is to be used sparingly. Showers and faucets shall be turned off after each use.

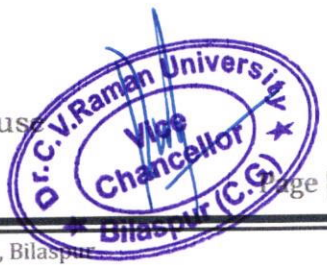
ii. Cold water shall be used whenever possible, unless sanitary or other special requirements necessitate the use of hot water.

iii. Low flow toilets, showers, and faucets shall be installed whenever possible.

iv Make efficient and environmentally responsible use of water, including identifying opportunities for water reuse.

WASTE REDUCTION AND RECYCLING

- To set and achieve targets for reducing resource use



- To increase the rate of recycling of all appropriate materials based on life-cycle principles.
- To implement sustainable resource management practices based on reduce, reuse and recycle principles.

AWARENESS AND TRAINING

- To communicate internally and externally the University's environmental objectives and performance.
- To raise awareness among the staff and students of the University's environmental impact, activities and perform and good practice.
- To provide appropriate environmental educational Programmes for stall and students.
- To encourage and facilitate feedback and suggestions on ensuring good practice

SPECIFIC MEASURES THAT UNIVERSITY CAN IMPLEMENT:

LIGHTING

- Most lighting on CVRU campus to be upgraded to high efficiency lighting (such as T5 fluorescent, LED technology, etc.) with electronic ballasts.
- Increased use of day lighting should be considered because use of daylight spaces decreases energy costs and may improve productivity.
- Lighting, wherever practical, should be controlled by our campus-wide energy management system: Occupancy times, unoccupied period set-backs, and environmental parameters, as well as campus-related (and athletic) activities will be coordinated to ensure that the best possible use (or conservation) of resources is taking place
- Install solar cells on the University Building's rooftop.
- Reduce the brightness of computer screens.
- Turn PCs off or into stand-by mode when idle

WATER USAGE

- Water leaks, dripping faucets and fixtures that do not shut off should be reported
- Rain-water harvesting should be implemented.
- Use automated flush valves (or 2-way flush valves), waterless urinals, restrictors on faucets and showers should be used in restrooms.
- Install water saving devices in toilets and tabs

REUSING OLD WATER BOTTLES

- Reuse old water bottles or purchase water bottles that one can refill instead of discarding a new bottle after single use.

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MINIMIZE USE OF PAPER

- Maximize use of paperless technology storing of data lecture notes on email etc.
- Take notes electronically
- Introduce double sided printing to reduce paper waste

PURCHASING

- Energy efficient products shall be purchased whenever possible. For examples: see the US Environmental Protection Agency Energy Star products list
- Recyclable and reusable products should also be purchased when feasible to reduce disposal costs

RECYCLING

- When economically feasible, recycling shall be expanded to include (or enhance existing programs) regarding such things as green waste (for composting) construction waste, and used office waste such as computers.

RECYCLING STATIONS IN UNIVERSITY CAMPUS

- The first step toward green university campus is to make recycling as easy as possible. Every trash bin on campus will be paired with a recycling bin for students to toss plastic bottles, paper, glass, cans and cardboard into without having losers it all out beforehand. Using this system, the College hopes to achieve substantial waste diversion rate.

E-WASTE RECYCLING

- University campuses are expected to have broken and outdated electronics Hence collection bins for collecting e-waste on campus will be put up at convenient places

FOLLOW-UP:

a. Monitoring

- No energy conservation program will be successful it progresses not monitored on a continuing basis.
- Meter readings can be used to track utility consumption, and the data can be used locate problem areas as well as determine if conservation goals are being met.
- The university currently has most of its campus buildings metered for electric consumption, shall be metered on a "per-building basis"
- We consider this an important initiative since this will enhance our ability to measure progress in our conservation/operational efforts:

b. Training

Training must be provided to ensure that both operations and service technicians have the skills and knowledge to effectively apply the technology used to achieve energy savings

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c. Education

The staff and student cooperation and support of the energy policy are key to its success in education program that provides information on utility costs, trends, and user impact on these costs will enable the campus population to understand the need for this policy, and how it can positively impact them by freeing up money from utilities for educational purposes.

d. Infrastructure on Campus:

1. Water Harvesting system
2. Solar Panel
3. Bio-Gas Plant
4. Battery-powered Vehicle
5. Sensor-based LED Bulbs/Lights
6. Bi-Cycles & Pedestrian-Friendly Pathways
7. Medicinal Garden & Botanical Park
8. CVRU-Green Raman Club
9. Minimum usage of Papers
10. E-waste Collection
11. Waste management System

e. Future Plan:

- To calculate the Carbon Footprint of the University
- Installation of Solar Panel in all the CVRU Buildings
- To make the campus in paperless mode